REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1, 9, 10, 18, 19 and 25 are currently being prosecuted. The Examiner is respectfully requested to reconsider her rejections in view of the Amendments and remarks as set forth below.

INFORMATION DISCLOSURE STATEMENT

The Examiner has acknowledged 2 Information Disclosure Statements filed on July 8, 2003 and December 5, 2003. Initialled copies of the PTO-1449 forms have also been received from the Examiner. However, the Examiner has not acknowledged the Information Disclosure Statement filed on January 25, 2005. The Examiner is respectfully requested to acknowledge this Information Disclosure Statement as well and to provide an initialed copy of that PTO 1449.

CLAIM INTERPRETATION

The Examiner pointed out that claims 1 and 20 appear to be utilizing means plus function language presumably in regard to the term "moving means for moving". Claim 20 has been cancelled. By way of the present amendment, Applicants have amended the term in claim 1 to only refer to "means for moving". Also, Applicants have amended all of the claims to change the term "moving means" to means for moving so that this term is consistent throughout the claims.

CLAIM OBJECTIONS

The Examiner objects to claim 21 due to the plural form of "claims". Claim 21 has been cancelled rendering this objection moot.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-17 stand rejected under 35 U.S.C. § 103 as being obvious over Nambu et al. (U.S. Patent 5,615,430) in view of Oota (U.S. published application 2002/0039403). This rejection is respectfully traversed. Claims 2-8 and 11-17 have been cancelled rendering this part of the rejection moot.

Applicants have amended claim 1 to include the limitations of claim 6 so that the claims now relate specifically to the embodiments of Figures 7 and 8. Thus, claim 1 describes the means for moving as including a moving mechanism for linearly moving the CT scanner and the common bed.

The present invention relates to a system for radiation therapy where a common bed is used by a number of different pieces of medical equipment. These pieces of equipment include a CT scanner which is used for finding the location in the patient that requires treatment and a radiation apparatus to treat the affected portion. The present invention addresses the problem of moving the patient from a position where the affected portion is located to a position where the treatment occurs. The present system describes a moving mechanism for linearly moving the CT scanner and the common bed with the linearly moving mechanisms crossing one another so that the bed may be

moved from the CT scanner to the irradition apparatus that is disposed parallel to the CT scanner.

Since the position is being transferred in a linear movement, it is much easier to control the position of the patient compared to transferring by a curved or rotating movement. Accordingly, it is possible to suppress the occurrence of positional errors compared to systems which utilize a curved movement. In particular, when a linear movement is used to move the patient to an irradiation mode from an imaging mode, confirmation of the position of the target by using a laser beam is simplified compared to a system that changes using a curved movement. Accordingly, the accuracy of the therapy is greatly improved. When using radiation therapy, a small difference in positional accuracy influences the results of the radiation therapy to a great extent. Thus, it is possible to significantly enhance the control of the positional accuracy and thus increase the effect of the radiation therapy.

Further, in the present invention, the CT scanner is disposed in parallel to the radiation apparatus so that interaction from the radiation means in each apparatus is reduced compared to a system where the apparatuses face each other. Also, it is easy to check whether or not positional errors have occurred and to correct the error, compared to apparatuses that are aligned on a curve.

The Examiner points out that Nambu discloses a composite system having a CT scanner, radiation apparatus and X-ray simulator that use a common bed. The Examiner points out that the bed is capable of both linear and curved movements and may rotate

on a turntable. The Examiner admits that this system does not include the movement of the CT scanner or radiation apparatus or X-ray simulator.

As shown in Figure 9 of Nambu, the bed 5 is used with both a linear accelerator 1 and CT apparatus 3 by utilizing a rotating swing arm 9. In order to prevent contact between the table top and the CT apparatus, the table top 5a of the bed is retracted. Thus, Nambu discloses a composite system where a patient moves between apparatuses by only a rotary movement of a bed, and when the bed rotates the table top is extended into and retracted from the CT scanner in order to prevent contact.

Applicants submit that there is no motivation for one skilled in the art to replace this rotating movement with a linear movement. This system utilizes a means for rotating the bed horizontally around a predetermined central axis so as to position the bed on a predetermined location. One skilled in the art would not change the curved or rotating movement of the bed to a linear movement based on the problems to be solved by this reference.

Furthermore, in the system shown in Figure 10 in Nambu, all the isocenters of the apparatus are put on the same concentric circle so that each apparatus faces each other on the curve. Accordingly, it is easy to receive interaction of the radiation beams by different apparatuses. Further, if the position of the isocenter is deviated, it is difficult to recognize the deviation and correct the position of the apparatus.

The Examiner relies on Oota et al. to show a system which includes a CT scanner, an irradiation apparatus and an X-ray device where the CT scanner and X-ray system are movable on rails on the floor and ceiling. Oota also teaches movements of the

systems which cross each other. The Examiner also points out that the bed is adjustable both vertically and laterally along axes C and D to position the patient. The Examiner feels it would have been obvious to modify the Nambu et al. system with the teachings of Oota to make the system more compact.

Applicants submit that Oota does not show a system which includes a irradiation apparatus. Oota tries to improve the operability of the positioning of a bed, c-shaped arm and CT gallery in an IVR CT apparatus [0008]. This apparatus is used for an operation such as blood vessel formation by catheter manipulation. In a blood vessel imaging room, an X-ray CT apparatus is installed together with a circulatory organ X-ray diagnostic apparatus (angiographic apparatus) including a catheter bed. Oota discloses a system for imaging to check the position of the affected portion of the patient or finding the location of the affected portion. Oota does not disclose a composite system for radiation therapy which includes a CT scanner, an irradiation apparatus, and a common bed.

The Examiner points out that Oota teaches movements of the system which cross each other. However, Oota does not teach a moving mechanism for linearly moving a CT scanner and a common bed where the linear moving mechanisms cross one another. Oota discloses that the bed is made of a stand 1a which can ascend and descend along the arrow C and a table top 1b which is supported on stand 1a. The table top is cantilevered by the stand fixed on the floor surface [0031]. Thus, the bed used in the system of Oota does not move and Oota does not teach that the CT scanner is disposed in parallel to the irradiation apparatus.

Applicants furthermore submit that it would not be obvious to modify the system of Nambu with the teachings of Oota to be more compact. Furthermore, Applicants do not believe that the combination of the systems would be more compact. Further, one of the main features of the Nambu system is that a plurality of medical apparatus share the bed by rotating the bed in order to position the bed at a predetermined location with respect to these apparatus. Each apparatus is arranged such that respective isocenters are placed on a locus of a central axis of the turn table. All isocenters are put on the same concentric circle. Therefore, in the system of Nambu, the CT scanner is arranged in a specific position so that one skilled in the art would not see the need to move the CT scanner. Further, Oota does not suggest the subject matter of the present invention and even if the teachings were combined with Nambu, the present claimed invention would not result.

Claims 9, 10, 18, 19 and 25 depend from claim 1 and as such are also considered to be allowable. In addition, these claims recite additional features which make them additionally allowable. Claim 9 points out that the common bed utilizes an isocentric rotation mechanism, which is not seen in the references. The use of this arrangement is described in paragraph [0073] - [0078] of the specification. Using such a system, it is also possible to further enhance the accuracy of the irradiation due to the particular movement of the bed. This is also not described in the references. Claim 25 further describes that the common bed is movable within the scanner so that the affected portion is at a center point. Accordingly, Applicant submits that these claims are additionally allowable.

Claims 18 and 19 stand rejected under 35 U.S.C. § 103 as being obvious over Nambu et al. in view of Oota as applied above and further in view of Liu (IEEE article). This rejection is respectfully traversed.

First, claims 18 and 19 are allowable based on their dependency from allowable claim 1 as indicated above. Furthermore, the Examiner relies on Liu et al. to show a system having a field of view of 200 mm. The Examiner feels it would have been obvious to modify the combined system of Nambu et al. and Oota et al. with the teachings of Liu. Applicants have now amended claim 18 to point out that the diameter of the CT scanner has a size which would allow the common bed to be placed movably in the lateral direction in the detectable region of the scanner. Applicants submit that the combination of Nambu and Oota do not show this feature even if combined with Liu et al. Accordingly, Applicants submit that claims 18 and 19 are allowable. Further, claim 19 further describes a positional adjustment means to adjust the position of the patient in the lateral direction. Applicants submit that this claim is additionally allowable.

Claims 20-22 and 24 stand rejected under 35 U.S.C. § 103 as being obvious over Nambu et al. and Oota et al. in view of Bartels (U.S. Patent 6,845,258). This rejection is respectfully traversed. Since these claims have been cancelled, this rejection is rendered moot.

Claim 23 is rejected under 35 U.S.C. § 103 as being obvious over Nambu et al. in view of Oota et al. and Bartels et al. as applied above and further in view of Liu et al.

This rejection is respectfully traversed. Since this claim has also been cancelled, this rejection is also rendered moot.

CONCLUSION

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejection and allowance of all the claims are respectfully requested.

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Respectfully submitted,

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